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GRADE XII EXTERNAL EXAMINATIONS IN RELATION TO
UNIVERSITY ACHIEVEMENT IN THAILAND

BY



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The undersigned certify that they have read,
and recommend to the Faculty of Graduate Studies for
acceptance, a thesis entitled "Grade XII External
Examinations in Relation to University Achievement in
Thailand" submitted by Chirapan Sirichoti in partial
fulfillment of the requirements for the degree of Master
of Education.

ABSTRACT

This study was conducted to examine the relationship between the Grade XII Examination scores and success in the first year in the Faculty of Arts, Chulalongkorn University, Thailand.

The investigation centered about the following tasks:

1. To determine if there is any significant relationship between the Entrance Examination and the Grade XII Departmental Examination.

2. To determine how well success in the first year of university can be predicted from the students' results on the Grade XII Departmental Examination.

3. To determine how well success in the first year of university can be predicted from the students' results on the University Entrance Examination.

4. To compare the Grade XII Departmental Examination with the University Entrance Examination results in each subject area as separate predictors of success in the first year of university.

A representative sample of fifty students entering the Faculty of Arts in 1966 at Chulalongkorn University was drawn.

In four subject areas -- Thai, English, Social Studies, and French -- correlations were calculated involving the Grade XII Departmental Examination, the University Entrance Examination, and first year university grades.

The results of the study indicated as follows:

1. There was a substantial relationship between each subject of the Grade XII Departmental Examination and the University Entrance



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Examination, and also between first year university grades and scores on each of the two predictors.

2. The Grade XII Departmental Examination in Social Studies was found to correlate significantly higher with university grades in social studies than University Entrance Examination test scores in that subject. Correlations for other subjects did not differ significantly.

It was recommended that similar studies involving other faculties and other universities be carried out. If results were similar to those of this study it was suggested that one set of examinations be abandoned.

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CHAPTER I

INTRODUCTION

Background to the Problem

Thailand is presently concerned with implementing a plan for economic and social development. In this plan, the universities and colleges are expected to play an important role. In Thailand there is a dire shortage of doctors, engineers, teachers, agricultural workers, economists, planners, and people in some areas of the social sciences. To cope with this situation, institutions of higher education are called upon to train more and more professional workers in these fields. They have to satisfy the needs of the rapidly changing society in the country.

The demand for more professional people has prompted an increased demand by high school students for further academic work in the higher institutions. The expected increase from 1968 to 1972 is twenty percent, as reported in Education in Thailand Series (1968). This is a reflection of growing Grade XII enrolments, which is reported by the Educational Planning Office of the Ministry of Education (1967), to be increasing at the rate of ten percent each year. Entrance examinations for the selection of university applicants who are capable of completing university have been used in order to avoid the wastage both of economic and human resources. These examinations are open to students who have completed Grade XII and passed the Departmental Examinations.

Since 1948 students in Grade XII who intended to enter universities have been required to write University Entrance Examinations in certain subject areas depending on the requirements of the faculties of different universities. The administration of the University Entrance Examination has been a big, and important, undertaking. At first, each university administered the entrance examination separately. Later, with the intention of putting the university entrance examination on a more economical basis in relation to energy, time, and money, the National Education Council in 1962 took the whole responsibility for preparing, printing, issuing, administering, and scoring the entrance examination in the different subject areas for those students intended to register in particular faculties, following the announcement of the Grade XII Departmental Examination results. The aim was to select successful applicants for different faculties of each university throughout the country.

This procedure, however, was not considered satisfactory. An attempt to change the system of selecting students for university education, and to explore the merits of alternate systems, has been made.

At the first meeting of the University Committee Selection Board in 1967, there was a suggestion that it would be desirable to use the Grade XII Departmental Examination and a test of scholastic aptitude as the criteria in the selection of students for universities. A plan was set up whereby the scholastic aptitude test would be administered before the Grade XII examinations (about November) and

the result given to the students so as to serve as a guide for studying. The scholastic aptitude test would also serve the universities as one criterion for selecting students for each university. The results of the Grade XII Departmental Examination would be used to indicate the students' academic achievement. Those who showed scholastic aptitude and demonstrated academic achievement would be interviewed before being enrolled. However, the proposal was rejected because the construction and the pretesting of the scholastic aptitude test would be very time consuming. Besides, such tests would require special skills of the teachers who would use and interpret them.

An additional recommendation of some members of the Committee of University Selection Board was to discontinue the use of university entrance examinations as they viewed them as needless duplication. The opposing viewpoint was that the selection of university applicants should be based on the university entrance examination because it was believed to be more difficult than the Grade XII Departmental Examination, and hence would maintain a higher standard of university selection. Also, for those who failed to be selected the previous year, this would provide a second chance to qualify.

It appears, therefore, that there is a need to make a study of Grade XII Departmental Examinations in relation to university entrance. In particular, such questions as the following are important:

1. How well do the Grade XII marks predict success in university?
2. How well do the entrance examinations predict success in university?

3. What is the relationship between the Grade XII marks and entrance examination scores?

Purpose of the Study

This study seeks to answer the general questions stated above. The following tasks were undertaken in view of these questions.

1. To determine if there is any significant relationship between the Entrance Examination and the Grade XII Departmental Examination.

2. To determine how well success in the first year of university can be predicted from the students' results on the Grade XII Departmental Examination.

3. To determine how well success in the first year of university can be predicted from the students' results on the University Entrance Examination.

4. To compare the Grade XII Departmental Examination with the University Entrance Examination results in each subject area as separate predictors of success in the first year of university.

Limitation of the study

Owing to limitations of resources this study was confined to one university. Chulalongkorn University was selected because, according to a study by the Educational Planning Office (1967) it is the most favorable for students to enter. Also, it is the oldest university in Thailand, having been founded in 1917. Since the faculties vary from one another, it was also necessary to treat faculties separately. The data gathered in this study were limited to the Faculty of Arts, and involved only those students who completed Grade XII in 1966 and in the same year passed the Entrance Examination.

Possible Contributions of the Study

The findings from the investigation may contribute the following:

1. Intercorrelations among Grade XII Departmental Examination marks, University Entrance Examination scores, and first year university grades will give indications as to whether there is unnecessary duplication in the testing of university applicants.
2. The result of this study may help the committee who supervise the University Entrance Examination to improve the present system of selecting students for university education and give substantial aid in the selection of prospective candidates.
3. This study may locate possible weaknesses in the examinations not previously indicated.

CHAPTER II

SURVEY OF THE LITERATURE

The objectives of education in the universities in Thailand have not been officially stated. However, Professor Kasem Udyanin, Dean of the Faculty of Political Sciences, Chulalongkorn University, writing in the Journal of the National Education Council (January, 1970) on the topic "The University in Relationship to Social Structures" has this to say about the goals and roles of higher education in the present society:

It is a place for grown-ups to study, think, contemplate and deliberate for themselves what the facts are, what they should believe, and what applications they should make of the knowledge they have learned.

He further stated:

No matter what the major field of specialization of the students is, the university should attempt to give a balanced program of study which includes, besides technical and professional training, opportunities to study subjects aimed at increasing the student's appreciation of intellectual, cultural, moral and even aesthetic education. (p. 33)

The goals of university education mentioned above will be facilitated if there is a careful screening of promising candidates. The University Entrance Examination was introduced to enable the careful screening, however, its effectiveness has not been studied extensively.

Other countries, such as the United States and Canada, have used various measures for university selection. Both academic and non-academic devices have been used as predictors of university success. Among the academic devices that have been widely used are high school average, high school rank; and college entrance tests such as the Cooperative Tests

(COOP), and various scholastic aptitude tests. The aptitude tests includes the School and College Ability Tests (SCAT), the Scholastic Aptitude Tests (SAT) of the College Entrance Examination Board (CEEB), the American College Test (ACT), and the American Council on Education Psychological Examination (ACE).

American Studies

Correlations between performance in high school and university success are reported in a number of studies (Goldthorpe, 1929; Segel, 1934; Travers, 1949; Garrett, 1949; Bexdie and Sutter, 1950; Scannel, 1960; Vick and Hornaday, 1962; and Michael and Jones, 1963). Generally, they found that the high school record was the best single predictor of success in university. Various studies by Garrett (1949) revealed that for the prediction of university success, high school average is more efficient than any kind of rank, CEEB achievement tests, or intelligence tests. The thirty-two correlations derived ranged from .29 to .83 with a median value of .55.

Scannel (1960), in his investigation of the prediction of college success of 3202 students from elementary and secondary schools entering the State University of Iowa in 1952, obtained the correlations between high school grade point average with freshman and four-year grade point averages of .67 and .59 respectively.

Michael and Jones (1963) studied the validities of high school grades and the scores on the scholastic aptitude test for Liberal Arts freshmen entering the University of Southern California from 1956 to 1958, and for 1961. The results indicated that the high school record was, in almost every case, the best predictor of university grade point average. The correlations for male group ranged from .35 to .58 while those for

female group ranged from .47 to .52, and in almost all cases, correlations for females were higher.

Another measure that has been used as a predictor of success in university is the Cooperative Tests (COOP). In a number of studies (Chahbazi, 1955; Henderson, 1957; Richards, 1957; Hansmeier, 1960; Vick and Hornaday, 1962), correlations ranged from .29 to .60. It was noted that when the English subtest was used, the correlations between the COOP tests and college achievement increased. Richards (1957) using COOP English and COOP General Culture as predictors in his study on the prediction of first year average in the Columbia Theological Seminary, calculated the correlations between the two predictors and the criterion to be .57 and .50 respectively.

Hansmeier (1960) used the COOP English test subscores, Mechanics of Expression, and Effectiveness of Expression as predictors. He found the subtests correlated with first year university grades .598 and .598.

The ACE has also been used in attempts to predict scholastic achievement of students. Generally, it was found that the ACE by itself was not sufficiently predictive to be used as a criterion of success at the post high school levels but it was considered of value in counselling. A number of studies (Ianigan, 1947; Lins, 1950; Samenfeld, 1953; Grater and Thalman, 1955; Swensen, 1957; Corotto, 1963; and Kunhart and Olsen, 1964), all arrived at this conclusion.

Lins (1950) investigated the comparison between the high school percentile ranks and the ACE on the prediction of freshman success in the University of Wisconsin. He reported that the two predictors correlated .58 and .42 with the criterion.

Samenfeld (1953) studied the predictive power, on the college achievement, of the ACE administered to ninth grade students. The findings indicated that whether the ACE was given in the ninth grade or in the twelfth grade, it was equally good for predicting college success. He suggested that it should be of value for high school counselors.

The other academic aptitude tests investigated in other studies are SCAT, SAT, and ACT. One or more of SCAT, SAT, and ACT were employed by Spaulding (1959), Vick and Hornaday (1962), Nichols and Holland (1963), Boyce and Paxson (1965), Himmelstein (1965), De Sena and Weber (1965) and Forrest (1967). Such studies reported correlations that varied from .28 to .66.

Among the studies cited here, Mann (1961) is typical. Having compared the results of the study of the validity of the two predictors, SAT and SCAT, he found that SAT Verbal and SAT Mathematics correlated .66 and .63 with the first year grades while SCAT Verbal and SCAT Quantitative correlated .66 and .61.

In the study of Vick and Hornaday (1962), it was found that SAT Verbal and SAT Mathematics correlated with the college grade point average .455 and .375 while SCAT Verbal and SCAT Quantitative correlated .359 and .434 respectively.

Boyce and Paxson (1965), in their attempt to determine estimates of the local predictive validity of standardized aptitude tests used in admission and guidance programs, found the correlations between SCAT Verbal, SCAT Quantitative, and SCAT Total to be .49, .42, and .46 with the First Quarter Average, and between SAT Verbal, SAT Mathematics, and SAT Total and the same criterion to be .36, .38 and .46 respectively.

Studies on the use of ACT are relatively recent, since investigations began in 1959. Himmelstein (1965) found that ACT correlated .596 with the grade point average. Boyce and Paxson (1965) also calculated the correlations between ACT battery including English, Mathematics, Social Studies, Natural Sciences and Composite, and college grades of the corresponding subjects. They found the correlations to be .64, .47, .50, .46 and .57 respectively. De Sena and Weber (1965) reported a correlation between ACT Composite score and grade-point average to be .52.

Studies employing multiple correlation technique, such as those of Franz, Davis and Garcia (1958), Klugh and Bierley (1959), Scannel (1960), Mann (1961), Jones and Siegel (1962), Michael and Jones (1963), Michael (1965), and Keefer (1969) reported correlations from .42 to .83. Generally, SCAT, SAT, and ACT, when combined with other predictors, produced higher correlations than when used alone.

A study by Franz, Davis and Garcia (1958), on prediction values of the pre-admission variables for the Fall Quarter average grades of the Freshmen in the University System of Georgia, indicated that the combination of high school grade, SAT Verbal, and SAT Mathematics, in all instances, increased the predictive power. The multiple correlations ranged from .48 to .70. Mann (1961) also found that when the subtests of SAT and of SCAT combined with high school rank, the correlations increased to .82 and .83 respectively.

Keefer (1969), in his study using ACT as one of the predictors of college achievement, found that the combination of this measure, self-prediction grade-point average, and high school grade-point average,

caused correlation coefficients to increase considerably. When the Self-Prediction Grade-Point Average is added to the combination of ACT and High School Grade-Point Average, correlations are raised substantially from .499 to .600, from .560 to .812, from .467 to .556 and from .492 to .790 for the four grading periods, respectively.

Canadian Studies

In Canada, studies are at present under way in several provinces though few reports have been published. Some relevant investigations that are pertinent to the present study -- first, on the Grade XII Departmental Examination as the predictor of success in the first year at university; and second, whether the result of the examination is a reliable basis for university admission, will be reported.

Perhaps the first study to investigate the predictors of success in college was carried out by Bernhardt (1929). The data were collected from 265 students entering the Faculty of Arts, Victoria College, University of Toronto in 1927; 217 in the first year, 46 in the second year, and 2 in the third year. The results obtained indicated that high school rank was the best predictor of college success. Ages also were related to success in college. The students younger than nineteen when they entered college showed a smaller percentage of failure than those older than nineteen.

Cameron and associates (1939) conducted an investigation to determine the relation between the Departmental Matriculation Examination and success in the Faculty of Arts in four universities in Ontario. The data used in the study applied to 802 students in the University of Toronto, 215 in the University of Western Ontario, 163 in Queen's and 159 in McMaster in 1932. The correlations between upper school and first year university average marks for the Pass Course ranged from .437 to .569. For the Honour Course,

they varied from .634 to .679. In Queen's University, the correlation was .597 for the total group. Other findings were: a high relationship existed between Middle and Upper School marks; the relationship between matriculation and first year university marks was only slightly less than that between first and second year university marks; there was a great deal of variations between matriculation subjects and university marks in the same subjects, the highest correlations usually being in languages. Comparing different Honour Courses, the result indicated that they varied considerably in difficulty among themselves.

The influence of the high school environment on predictive accuracy for success in the first year university in the Faculty of Arts in the University of Toronto, as predicted by the results of Grade XIII examination, was investigated by Fleming (1955). The survey group consisted of 824 students entering the Faculty for the first time in 1951. The findings showed that the correlation coefficient between the Grade XIII examination and university averages was larger for students from schools with favourable educational background, for female students, for younger students twenty years or under, and for students entering university immediately after high school graduation.

In the study, Fleming offered additional findings which were neither directly related to the objective of the study nor statistically tested. First, the Grade XIII results were apparently as useful for predictive purpose as any device used in the United States for corresponding groups. Second, prediction of university success in terms of total averages was more accurate than in terms of individual subject marks. Third, prediction of university English from Grade XIII English Literature, English Composition, and the Grade XIII average was better for the Honour group. Fourth,

prediction of university Mathematics from Grade XIII Algebra, Geometry, Trigonometry and the Grade XIII average was fairly good in the Honour group. Fifth, prediction for the university Natural Science group, including Physics, Chemistry, Geology, and Astronomy, from Grade XIII Physics, and Chemistry was unsatisfactory in the Honour group. The Grade XIII average predicted considerably better.

In his Master's thesis, Fitzpatrick (1956) found, for 253 students entering the Faculty of Engineering, University of Alberta in 1954 - 1955, a correlation of .58 between the Grade XII average and the first year university average, and .67 between Mathematics-Science average and the first year university average. The ACE Total score correlated .23 with the criterion. For the major experimental group, 151 in number, taking their entire school in Alberta, the correlation between the average of Grade XII Mathematics-Science and the criterion was rather high ($r = .71$), and that between Grade XII average and the criterion was .62.

Clarke (1958) reported a study by Fair using one hundred Arts and Science freshmen entering the University of Alberta in 1953 and continuing to 1956. He found the correlation between Grade XII average and University first year average to be .64 whereas the ACE Psychological Examination correlated with the criterion only .40.

Evenson and Smith (1958) conducted a study for the Alberta Department of Education to examine the validity of the Departmental Examinations for selecting students for university education. They compared the validity of the Grade XII Departmental average and the ACE Psychological Examination on the success of the first, second, third and fourth year in university of students enrolled in the University of Alberta in 1951. The ACE was not a very effective predictor of success in any faculty. The Faculty of

Engineering had the largest correlation (.59) between the Grade XII average and First Year Average. The next was .58 between the predictor and First Year Average in the Faculty of Arts and Science.

Evenson and Smith (1958) also investigated the relationship between First Year University success and the following variables: the 1956 Grade XII Departmental marks, College Entrance Examination Board achievement battery, and the Scholastic Aptitude Test (SAT). They found that the correlations between the Departmental marks and the First Year Average, in all cases, were higher than those of other predictors. The correlations varied from .24 between Departmental English and the First Year Average to .58 between Departmental Physics and First Year Average. It was concluded that the CEEB could not substitute for the Departmental examination as a basis for university selection.

Zurowsky (1959), in his Master's thesis, conducted a study using the sample selected for the 1956 Grade XII Survey. He used sixteen prediction variables from Grade IX and Grade XII Departmental Examinations, Grade XII Psychological Test (SCAT), and University Entrance Tests (COOP) to predict the first year university success in seven science courses, two business administration courses and the university average. The results obtained indicated that the Science average of the Grade XII Departmental Examinations was the best single predictor. Mathematics and Social Studies were the next best. The correlations were .632, .500 and .425 respectively. The combination of the predictors, Grade XII marks, SCAT, and COOP increased the correlation with the university average to .656.

Black (1960) studied the predictive value of the combined standardized tests and the combination of the Departmental marks used in the 1956 Grade

XII Survey. He found that the combination of the seven Grade XII scores required for admission to Engineering yielded the multiple correlation .69 with the first year Engineering average. The coefficient was as large as that of the twenty-four combined predictor variables and the Grade IX results. The combination of English 30, Social Studies 30, Mathematics Average, Science Average, and Foreign Language Average was considered to have the best predictive efficiency.

Fleming (1962), in Report No. 9 of the Atkinson Study of Utilization of Student Resources, studied the effectiveness of certain combinations of predictors to be used with the three groups of students in the University of Toronto; those in Applied Science and Engineering, those in Honour Arts, and those in General Arts. For the Faculty of Applied Science and Engineering, the Grade XIII average of first attempts on the three Mathematics and the two Science papers (Algebra, Geometry, Trigonometry and Statics, Physics, and Chemistry) correlated highly with the university average ($r = .60$). The best predictor was found in the combination of the average of first attempts on all Grade XIII papers, average on Grade XIII Mathematics and Science, the Grade XII average and the SAT-Mathematics score. The multiple correlation increased to .66. For General and Honour Arts, there was a substantial correlation between the Grade XIII average of marks on all papers and the first year university average ($r = .67$). The addition of the Grade XII average, the SAT Verbal and the teacher's rating on chances of university success did not significantly increase the multiple correlation ($r = .69$).

Mack (1963) studied the usefulness of the ACE Linguistic, Quantitative and Total scores, the A and C₂ portions of the Cooperative English battery, and the high school average, on the prediction of success for the 1960-61

freshmen at the University of Alberta. He found that the best single predictor throughout the five faculties (Arts, Education, Engineering, Science and All Other Faculties) was the high school average. It correlated .715 with the first year average of the Faculty of Science. The smallest correlation was .450, found in the Faculty of Education.

Knowles and Black (1965, 1966) studied the influence of sex, faculty entered, and the size of graduating high school on the prediction of freshman success at the University of Alberta. The two sample groups consisted of freshmen entering the Faculties of Arts, Education, Engineering, and Science in 1962. The study first indicated that larger high schools with more than twenty-five teachers yielded better prediction of freshman success than smaller schools. Second, for female students both the level of performance and the correlations between Grade XII examinations scores and freshman success were higher than for male students. Third, in prediction of first year average, the highest correlation was between the predictors and Engineering Average followed by Science, Arts, and Education respectively. Fourth, the Grade XII Departmental Average was superior to the Principal's rating in predicting freshman success. However, the use of the latter was suggested as they are available earlier.

For the next investigation, they found, in every case, that there was no statistically significant improvement of validity coefficients when the ACE scores were combined with the Departmental Average or the Principal Rating Average. In another study, it revealed that normalization of scores did not contribute significant difference on the prediction of freshman success at the University of Alberta.

Black (1969) carried out a further study of the validity and efficiency of using Principal's Rating. The ratings, which were compared with the use of Departmental scores, were of three types: Principal's Rating Score, Rank-in-Class, and Estimate of Success in University.

Although the sample used was not representative of the total Alberta freshmen intake at the University of Alberta in Calgary, the results were similar to the previous study. The Principal's Rating Average tended to be an underestimate, with the possible exception of rural males. However, it was only slightly less effective in predicting, in comparison with Departmental Averages. Thus, its use would be acceptable for admission purposes. The Principal's Estimate of University Success was an acceptable rating; its use was suggested to supplement Principal's Rating Average in case of conflicting data.

MacDonald (1970), in his Master's thesis, investigated the prediction, in years after the first, at six universities located in the Atlantic Provinces. The results obtained indicated the following: the Grade XII Departmental Average was the best predictor; the academic work completed in the preceding year had the most predictive power on the university success in the following year; the predictability of success was most effective for the Science Faculty followed by Engineering, Arts and Education; no significant improvement of prediction was gained from the application of multiple correlation technique. The last finding is inconsistent with results reported in similar studies.

Thai Studies

The majority of the previous research studies concern the relationship between standardized tests, such as achievement and aptitude tests, and the result of study in universities. In Thailand, no standardized test

used in university admission has been constructed. The research studies were thus concerned with the relationships between the results of two or three academic examinations. Some of these studies are outlined here.

Thongbai (1963) conducted a study investigating the relationship between the mathematics entrance examination and the first year final examination in the same subject in 1962. The data were collected from the students in the first year in the Teacher Training Colleges in Bansomdej Chaopaya, Suan Sunantha, Suan Dusit, Dhonburi, and Petchburi Vitayalongkorn. Correlations reported were .36, .28, .26, .59, and .35 respectively. These showed significance at the .01 level. For Pranakorn Teachers College, the correlation was only .04. It was not significant at the .05 level.

Sathorn (1963) investigated the relationship between the marks on the University Entrance Examination and first year mid-term examination. Subjects and corresponding correlation coefficients are as follows: English, .33 - .82; Geography-History, .42 - .60; Chemistry, .21 - .58; Biology, .28; Physics, .13 - .26; Mathematics, .03 - .45; Thai, .03 - .33; Social Studies, -.06; and French -.43.

The study also reported that the students who attained total marks from the Grade XII Departmental Examination of seventy percent and up, recorded no failures. These students constituted 44% of the total group.

Sawangsuk (1967) made a study of students taking the University Entrance Examination between 1962 - 66 with the purpose of investigating success of secondary students in relation to the admission to universities each year. The general background, self-preparation before registration for the entrance examination, attitudes toward some occupations, and comparison between the Grade XII Departmental Examination and the University Entrance Examination, were also involved in the study for the purpose of collecting additional information which might be useful to educational

administrators both at the secondary and university levels.

His study involved students from different streams of secondary education; 570 from pre-science, 151 from pre-arts and the remainder from the vocational stream. The results showed that the correlation coefficients between total marks on the Grade XII Departmental Examination and English, Mathematics, and Science were .71, .71, and .85 whereas the correlations between total marks on the Grade XII Departmental Examination and the University Entrance Examination in some particular subjects such as English, Mathematics, Physics, Chemistry, and Biology were .62, .51, .77, .70 and .71 respectively. These findings revealed that the students who passed the Grade XII Departmental Examinations well in a particular subject, tended to pass the corresponding University Entrance Examination Subjects well too.

For the pre-arts students, correlation coefficients between the total average of the Grade XII Departmental Examination and the marks on English, Social Studies, and French were .52, .55, and .61. The correlations between total marks of the Grade XII Departmental Examination and the University Entrance Examination in Thai, English, and Social Studies were .44, .38, and .47, all of which were rather low. English and Social Studies of the Departmental Examination correlated .69 and .65 respectively with those of the University Entrance Examination. It showed that there were rather high relationship between each subject of the two examinations.

Tippan (1968) attempted to find the best predictor of achievement scores earned during the first two years in Chulalongkorn University and Silpakorn University, and to study the outcome of the use of combined predictors -- i. e., the Grade XII Departmental Examination scores and the University Entrance Examination scores. The scores of 407 students in Chulalongkorn University and 54 students in Silpakorn University who passed

Grade XII, and were enrolled in both universities in 1964 and 1965 were analysed by using Pearson's Product Moment Correlation and by multiple correlation. The results of the study indicated first, the degree of relationship of these marks was moderate, second, English showed the highest forecasting efficiency among different subjects, third, most of the Grade XII Departmental Examination scores, as the predictor of success in university were not statistically different from those of the University Entrance Examination, fourth, a combination of the scores of both examinations was a better predictor than the scores of any of the examinations.

The previous research studies, in conclusion, have conveyed the following implications for the present situation of university admission in Thailand:

- (1) Local validity of the Departmental Examination to each faculty of each university should be investigated and further researched.
- (2) The application of multiple correlation technique showed the improvement of predictive validity, therefore the construction of a scholastic aptitude test and specific achievement tests should be considered as an urgent need to be used in the combined predictive variables.

CHAPTER III

COLLECTION OF DATA AND RESEARCH PROCEDURES

The data in this study are marks of students in the first year in the Faculty of Arts, Chulalongkorn University in the academic year 1967. The marks collected from each student are of three kinds, as follows:

- (1) the Grade XII Departmental Examination in the year 1966.
- (2) the University Entrance Examination by the National Education Council in the year 1966.
- (3) the first year final examination by the Faculty of Arts in the year 1967.

These three categories of marks were obtained from the Division of the Promotion and Evaluation in Education, the Department of Secondary Education, the Ministry of Education, the National Education Council, and the Faculty of Arts, Chulalongkorn University.

Sample

As previously indicated in Chapter I, the present study was confined to the Faculty of Arts, Chulalongkorn University, with the purpose of studying the prediction of university success at the end of the first year. The data apply to those students who completed Grade XII in 1966, and were collected according to the following steps:

(1) The number of Grade XII students in all Thailand in pre-arts who took the Departmental Examination in 1966 totalled 2,314. The score in every course and every subject area of those students who comprised the sample were collected on a ten percent basis. Rather than employing a table of random digits, the name of every tenth student appearing in the files in the Department of Secondary Education was drawn for statistical treatment for the calculation of correlation coefficient. Hence the number of students selected was 231.

(2) From the 231 names drawn, those who passed the Grade XII Departmental Examination and later entered the Faculty of Arts were selected. They were only fifty in number. The sample of students consisted of these fifty people.

(3) Departmental Examination marks were collected from the Division of Promotion and Evaluation in Education, the Department of Secondary Education.

(4) University Entrance Examination marks were next recorded.

(5) First year final examination scores in the Faculty of Arts were then recorded.

The distribution of the average scores on the Grade XII Departmental Examinations is shown in Table I.

TABLE I - DISTRIBUTION OF GRADE XII DEPARTMENTAL EXAMINATION AVERAGE SCORES

Score Interval	Frequency
85.0 - 89.9	5
80.0 - 84.9	8
75.0 - 79.9	11
70.0 - 74.9	17
65.0 - 69.9	4
60.0 - 64.9	5
	<u>50</u>

Compilation of Data

The results of the three examinations were punched on IBM cards.

Each card held four types of data as follows:

- (1) A number identified each student;
- (2) Raw scores of the Grade XII Departmental Examination in pre-arts in each subject area, and the total marks;
- (3) Raw scores of the University Entrance Examination in the four subject areas, and the total marks;
- (4) Raw scores of the first year final examination of the Faculty of Arts in different subject areas, and the total marks in 1967.

Examinations in various courses and subject areas of the Grade XII Departmental Examination have different values for their final possible marks. The possible marks on the Grade XII Departmental Examination vary from one subject to another, but they total one thousand. However, the University Entrance Examination and the first year university final examination are based on a final mark of 100 in each subject. Table II shows the detail of the possible raw scores.

Depending on the general regulations for the Degree in Arts, the students are required to take the following subjects in the first year: Thai, English, Geography and History, one of French or German or Mathematics. In addition, they must take Library Science and another course listed under General Studies (General Science, Introduction to Philosophy, Beginning Acting and Use of Books and Libraries).

TABLE II

COMPARISON OF TOTAL POSSIBLE RAW SCORES OF THE THREE EXAMINATIONS

marks subjects	Grade XII Dept. Exam.	University Entrance Exam.	first year final exam.
Thai A	120		
Thai B	70		
Total Thai	190	100	100
English A	100		
Enblish B	70		
English C	70		
Total English	240	100	100
Social Studies A	120		
Social Studies B	70		
Total Social Studies	190	100	100
Mathematics*	100		100
French*	140	100	100
German*			100
General Science**	140		100
Beginning Acting**			100
Philosophy**			100
Library Science			100
Total	1000	400	600

*elective courses in the university

** General Studies electives

For the present investigation, no students from the sample were registered in Mathematics, and only eight were enrolled in German. The remainder were enrolled in French. As for General Studies, twenty-eight chose Beginning Acting, twenty-one selected Introduction to Philosophy and only one took General Science. All subjects are valued at one hundred marks. The total possible marks of the first year final examination of the Faculty of Arts was therefore six hundred.

Statistical Treatment

After all the required information was punched on IBM cards, procedures as outlined below were followed.

First, the following product moment correlations were calculated:

- (1) Correlations between all pairs of subject scores and the total marks of the Grade XII Departmental Examination and those of the University Entrance Examination;
- (2) Correlation coefficients between all pairs of subject scores and the total marks of the Grade XII Departmental Examination and those of the first year final examination;
- (3) Correlation coefficients between all pairs of subject score and the total marks of the University Entrance Examination and those of the first year final examination.

Second, means and standard deviations of scores were computed. These were calculated for every subject for the Grade XII Departmental Examination, the University Entrance Examination and the first year university final examinations. Means and standard deviations of the overall totals for the three sets of examinations were also calculated.

Differences between pertinent pairs of correlations were examined for significance. For example, the significance of the difference between

the correlation of Departmental Examination Social Studies scores and freshman Social Studies scores and the Social Studies Entrance scores and the Freshman Social Studies scores was determined. Correlations were considered significant if $p \leq .05$.

Each correlation was also tested for significance; that is, it was determined whether each correlation was significantly different from zero ($p \leq .05$).

CHAPTER IV

RESULTS OF THE STUDY

As mentioned previously in Chapter I, the results for each course have been discussed separately. Simple correlations between predictors and criteria have been listed according to each course. Table III to Table VI show correlations for the four academic subjects which are tested through Departmental Examinations (D.E.), University Entrance Examinations (U.E.E.), and first year university examinations (F.E.) in the Faculty of Arts. Table VII and Table VIII show correlations between General Studies marks and each of the subject marks. Table IX shows correlations among total scores.

TABLE III

CORRELATIONS OF THAI LANGUAGE SCORES ON THE GRADE XII
DEPARTMENTAL EXAMINATION, THE UNIVERSITY ENTRANCE EXAMINATION
AND THE FIRST YEAR FINAL EXAMINATION

	Thai B	D.E. Total Thai	U.E.E. Thai	F.E. Thai
Thai A	.59	.92	.45	.50
Thai B		.86	.36	.52
Total Thai			.46	.58
Thai (U.E.E.)				.39

It appears from Table III that both Thai A and Thai B correlated with Total Thai very highly ($r = .92$ and $.86$) but they correlated with each other only $.59$. The high correlations are to be expected since the Total Thai score is the sum of Thai A and Thai B. Total Thai of the Departmental Examination appeared to be the best predictor of success in the first year final examination ($r = .58$). This was followed by Thai B ($r = .52$) and Thai A ($r = .50$). The correlation coefficient between the University Entrance Examination and the first year final examination was only $.39$. However, the difference between the two correlations, the Departmental Examination and the University Entrance Examination with the final examination, was not significant at the 5% level.

The correlation coefficient between Total Thai of the Departmental Examination and the University Entrance Examination was rather low ($r = .46$).

TABLE IV

CORRELATIONS OF ENGLISH LANGUAGE SCORE ON THE GRADE XII
DEPARTMENTAL EXAMINATION, THE UNIVERSITY ENTRANCE EXAMINATION
AND THE FIRST YEAR FINAL EXAMINATION

	Eng. B.	D.E. Eng. C	Total Eng.	U.E.E. Eng.	F.E. Eng.
Eng. A	.40	.50	.86	.70	.57
Eng. B		.53	.72	.42	.39
Eng. C			.82	.59	.39
Total Eng.				.74	.58
Eng. (U.E.E.)					.72

From Table IV it appears that the best predictor of success in the first year final examination in English was the University Entrance Examination ($r = .72$) followed by Total English of the Departmental Examination ($r = .58$). However, the difference between these correlations was not significant at the 5% level. It was noted that the correlation of English A with the final examination in university English was nearly identical with the correlation between the final examination and the Total English scores ($r = .57$).

The correlation coefficient between Total English of the Departmental Examination and the University Entrance Examination was substantial ($r = .74$), as was the correlation between English A and the University Entrance Examination ($r = .70$).

TABLE V

CORRELATIONS OF SOCIAL STUDIES SCORES ON THE GRADE XII
DEPARTMENTAL EXAMINATION, THE UNIVERSITY ENTRANCE EXAMINATION
AND THE FIRST YEAR FINAL EXAMINATION

	S.S. B	D.E. Total S.S.	U.E.E. S.S.	F.E. S.S.
S.S. A	.57	.93	.45	.63
S.S. B		.84	.44	.57
Total S.S.			.50	.68
S.S. (U.E.E.)				.46

Table V shows that, for the final examination in university Social Studies, the best predictor of success was Social Studies of the Departmental Examination ($r = .68$), followed by Social Studies A ($r = .63$) and Social Studies B ($r = .57$). The correlation coefficient between Social Studies of the University Entrance Examination and the final examination was .46 which is different from that of the Departmental Examination. This difference is significant at the 5% level.

Total Social Studies of the Departmental Examination correlated .50 with the University Entrance Examination, followed by Social Studies A ($r = .45$) and Social Studies B ($r = .44$).

TABLE VI

CORRELATIONS OF FRENCH LANGUAGE SCORES ON THE GRADE XII
DEPARTMENTAL EXAMINATION, THE UNIVERSITY ENTRANCE EXAMINATION
AND THE FIRST YEAR FINAL EXAMINATION

	U.E.E.	F.E.
D.E.	.30	.64
U.E.E.		.61

Table VI indicates a rather low correlation between French scores on the Grade XII Departmental Examination and those on the University Entrance Examination ($r = .30$). Still, the relation-

ship is statistically significant at the 5% level.

The better predictor of success in French in the final examination appeared to be the scores on the Departmental Examination ($r = .64$) whereas the correlation coefficient between the University Entrance Examination and the final examination was only .61. However, the difference between the two correlations was not significant at the 5% level.

Table VII indicates that Thai Language was the best predictor of success in General Studies. The correlations are .46 for Beginning Acting, .48 for Philosophy, and .33 for Library Science. For Philosophy, the second best predictor was Social Studies ($r = .44$); all of these correlations are significant at the 5% level. No course other than Thai correlated significantly over all of the General Studies subjects.

TABLE VII

CORRELATIONS OF THE SCORES ON EACH COURSE OF THE GRADE XII
DEPARTMENTAL EXAMINATION AND GENERAL STUDIES SCORES ON THE
FIRST YEAR FINAL EXAMINATION

	Beginning Acting (N=28)	Philosophy (N=21)	Library Science (N=50)
Thai	.46	.48	.33
English	-.04	.30	.03
Social Studies	.02	.44	.14
French	-.12	.29	.02

TABLE VIII

CORRELATIONS OF THE SCORES ON EACH COURSE OF THE UNIVERSITY
ENTRANCE EXAMINATION AND GENERAL STUDIES SCORES ON THE FIRST
YEAR FINAL EXAMINATION

	Beginning Acting (N=28)	Philosophy (N=21)	Library Science (N=50)
Thai	.37	.39	.41
English	.12	.45	.22
Social Studies	.31	.15	.33
French	.10	.53	.22

It appears from Table VIII that Thai Language was the best predictor of success in Library Science ($r = .41$). The correlation was significant at the 1% level. For Philosophy, the course that had most predictive value was French ($r = .53$), followed by English ($r = .45$). These two correlations were significant at the 5% level. The remaining correlations were not significant.

TABLE IX

CORRELATIONS OF TOTAL SCORES ON THE GRADE XII DEPARTMENTAL
EXAMINATION, THE UNIVERSITY ENTRANCE EXAMINATION, AND THE
FIRST YEAR FINAL EXAMINATION

	U.E.E.	F.E.
D.E.	.71	.59
U.E.E.		.63

Table IX indicates that the total marks on the Departmental Examination correlated rather well with the University Entrance Examination ($r = .71$). The better predictor of success in university appeared to be the total marks on the University Entrance Examination ($r = .63$) followed quite closely by those on the Departmental Examination. The difference between the two correlations, however, was not significant at the 5% level.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATION

It has been eight years that the students who passed the Grade XII Departmental Examination have had to take the University Entrance Examination of the National Education Council according to the preference of faculty and university. The present system of selecting university applicants, however, needs improvement to save time, money, and energy, and the promotion of national growth both in economy and human resources.

There has been an attempt to find the relationship between the Grade XII Departmental Examination, the University Entrance Examination and success in university, to serve the needs mentioned above. This investigation was thus undertaken. The data in the study were those of fifty students from the sample of 231, ten percent of all 2,314 pre-arts students taking the Grade XII Departmental Examination in 1966, entering the Faculty of Arts the same year, and taking the first year final examination in 1967.

The correlations of the following five courses of the three examinations (Grade XII Departmental Examination, the University Entrance Examination and the first year final examination) were calculated: Thai, English, Social Studies, French and General Studies (Beginning Acting, Philosophy, and Library Science). Details regarding the means and the vari-

abilities of examination scores were presented in the Appendix.

The four specific purposes of this study were:

1. To determine if there is any significant relationship between the Entrance Examination and the Grade XII Departmental Examination.

2. To determine how well success in the first year of university can be predicted from the students' results on the Grade XII Departmental Examination.

3. To determine how well success in the first year of university can be predicted from the students' results on the University Entrance Examination.

4. To compare the Grade XII Departmental Examination with the University Entrance Examination results in each subject area as separate predictors of success in the first year of university.

With reference to the purpose of the study the following statements appear to be warranted by the data presented:

1. For each of the four academic subjects involved, Thai, English, Social Studies, and French, all correlations between Departmental Examination marks and University Entrance Examination marks are significant.

2. Correlations between Departmental Examination marks and first year university scores, and between University Entrance Examination scores and first year university scores were not statistically different with the exception of Social

Studies. In this case the Departmental Examination was the better predictor of university freshman scores in Social Studies. The correlations ranged from .39 to .72, with a mean of .58. These correlations are not high, but are not too different from those derived in similar studies in Canada and the United States.

In view of the fact that the two systems of examinations predicted about equally well, it may be concluded that consideration should be given to eliminating one system. However, studies similar to this would have to be carried out involving other faculties and other universities to determine if the results of this study represent the total picture.

Differences among the means and standard deviations of the predictors (see Appendix) indicate that consideration might be given to the relative weights of the various subjects. The means and standard deviations indicates that some subjects carry more weight than others. These weights may or may not be in the desired proportions.

Finally, in view of the modest correlations between the predictors and first year university success, it would appear that special efforts should be made to improve the correlations. Rather than supporting two sets of examinations, it might be wise to employ only one set, but to spend more time and money in improving the system that was retained.

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APPENDIX

TABLE X

MEANS AND STANDARD DEVIATIONS FOR THE DISTRIBUTIONS OF SCORES OF THE
THREE EXAMINATIONS

Subjects	Grade XII Dept. Exam.		University Entrance Exam.		First Year final exam.	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.
Thai A	94.1	5.5				
Thai B	53.2	4.2				
Total Thai	147.4	8.7	52.3	6.5	66.9	6.7
English A	76.7	9.8				
English B	60.3	5.1				
English C	49.1	6.8				
Total English	186.0	17.7	50.1	10.1	73.2	6.5
Social Studies A	88.8	7.8				
Social Studies B	50.1	5.4				
Total Social Studies	138.9	11.7	53.8	8.6	66.8	5.2
Mathematics	65.6	20.9				
French	113.2	12.6	79.0	8.3	69.0	7.8
German						
General Science	98.9	15.6				
Beginning Acting					71.7	10.5
Philosophy					69.0	7.2
Library Science					76.1	10.8
Total Score	750.3	67.7	235.2	23.2	422.8	35.2

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